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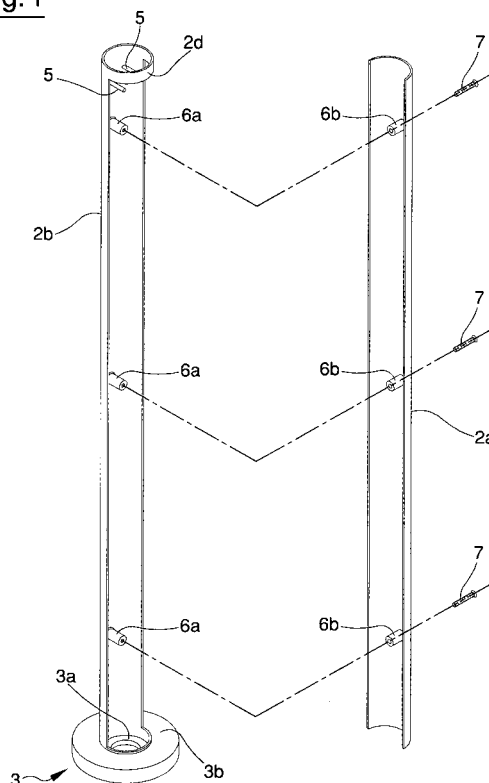
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(54) **Modular post for supporting metal panels for fences**

(57) The invention concerns a modular post for supporting flat metal panels (1) made with electrically-welded horizontal (1a) and vertical (1b) metal wires fixed to posts (2) which in their turn are fixed to the ground at one of their ends. The post in question has a part (2a) of its lateral surface which is detached from the fixed part (2b) of the post and which in use is reconnected, using removable connection means (6a, 6b, 7), to the fixed part so as to reconstitute the post; part (2a) of the post has a section of predetermined angular width, has a height not less than the height of the panel to be connected to the post, and extends starting from the upper side of the base (3) of the post; in use, between the facing edges of parts (2a) and (2b) of the post connected to each other, longitudinal gaps (2c) are created with a width roughly equal to the thickness of the horizontal wires of the panels connected to the post. [Fig. 1]

Fig. 1



Description

[0001] The present invention concerns a modular post for supporting metal panels for fences.

[0002] Panels have been in use for some time for making metal fences, made of electrically-welded metal wires, which in the process of erecting the fence are fixed to posts, also made of metal, in various ways; both the panels and the posts are normally, though not always, coated with plastic. The panels are elements with generally flat extension and are made by means of intersections of horizontal and vertical wires which are electrically welded in the process of manufacturing the panel itself, conferring a certain rigidity on the panels.

[0003] The construction of fences of this type is generally effected by fixing the various posts and connecting the various panels to them. The posts can be sunk into the ground or can be fixed to supports anchored to fixed structures, such as for example low concrete walls which are mainly used for valuable fences. The method of fixing the panels to the fence posts depends obviously on the structure and conformation of the post itself. The drawbacks encountered in constructing this type of fence derive from the complication of the fixture of the panels to the post and from the necessity of using special tools or fixing elements during assembly in order to secure the panels to the posts. Other disadvantages which some known posts present are those of not having the appearance of closed tubing, in other words of being open in a longitudinal direction (axial direction of the post) and of having irregular shapes not always aesthetically pleasing.

[0004] An object of the present invention is to eliminate the disadvantages indicated above by providing posts for making a fence of the type described, which, once assembled, present closed and standardised sections and which do not require the use of special tools or special fixing elements to secure the panels to the posts.

[0005] A notable advantage of the invention is that of allowing the easy and rapid assembly of the fence, even by a single person.

[0006] A further advantage of the invention in question is that of allowing the creation of aesthetically pleasing and functional fences.

[0007] These objects and advantages are all achieved by the invention in question as it is characterised in the claims set out below.

[0008] Further characteristics and advantages of the present invention will appear more clearly from the detailed description which follows of an embodiment of the invention in question, illustrated by way of nonlimiting example in the attached drawings, in which:

- Figure 1 shows a perspective view of the various parts which make up the post, not connected together;
- figure 2 shows a section in vertical elevation, executed along a plane passing through the connecting

means, of the parts of the post assembled together;

- figure 3 shows a frontal view, with some parts removed to better demonstrate others, of the post to which two panels have been connected.

[0009] The post 2 in question is used to support metal panels 1 intended to compose fences. These panels are substantially flat and are made up of horizontal 1a and vertical 1b metal wires which are electrically welded at the stage of manufacturing the panel. These panels are of fairly rigid type and are normally used to form robust fences which are comparable not so much with normal fences in metal mesh as with actual railings. In the process of creating the fence, the panels are fixed to the posts which in their turn are fixed to the ground, at one of their ends, by means of a base 3 to which the end of the post is anchored; the posts may be fixed to the ground, but with this type of fence it is much more common for concrete constructions to be used, such as plinths or low walls (not illustrated), to which the posts are fixed.

[0010] These posts are made using a tubular element and normally comprise an upper covering element 4 which has the function of closing the top of the post. The tubular element of which the post is made is normally cylindrical, and it is to this form that the attached figures refer; there is nothing however to prevent tubular elements being used of a different section, for example square, hexagonal etcetera.

[0011] The post in question features a part 2a of its lateral surface which is detached from the remaining fixed part 2b of the post which remains fixed to the base 3. Constructionally, the two parts of the post are obtained by starting from the complete post and, using for example a laser cutting device, cutting the outlines of the part 2a which is to be detached; when this is done the fixed part of the post, i.e. the part of the post that remains after the cutting and detachment of part 2a, presents an opening which corresponds to the detached part 2a of the post itself. This operation is normally, although not necessarily, effected before connecting the fixed part 2b to the base 3; the base of the post in question comprises a plate 3a to which is welded the fixed part of the post, and a cover 3b which can run along the post and which covers the plate 3a. In use, i.e. when the post is used for forming the fence, part 2a is reconnected to the fixed part so as to reconstitute the post, using removable connection means and with the procedures which will be described below.

[0012] Part 2a of the post has a section presenting an angular width which is predetermined according to the use of the post and which will be more fully specified below. The height of part 2a, i.e. of the opening in the fixed part 2b of the post, measured along the generatrices of the post, is not less than the height of the panel which is connected to the post and extends, starting on the upper side of the base 3 of the post; in use, between the longitudinal edges of parts 2a and 2b which face each other, longitudinal gaps 2c are created with a width rough-

ly equal to the width of the horizontal wires of the panels connected to the post. With this conformation, it is possible in the manner which will be described below, to clamp between the parts of the post the ends of the panels which are to be connected to it.

[0013] Inside the post, and specifically inside the fixed part of the post, hooking elements 5 are provided which have one end which is solidly fixed to the internal wall of the fixed part 2b of the post in an area which is accessible from the opening in the fixed part of the post itself; the free end of the hooking elements is, in use, accessible from at least one of said longitudinal gaps 2c. In the drawings two such hooking elements are indicated, formed using metal bar, each of which is used for hooking up a panel.

[0014] At the upper end of the post an intact area 2d is provided (not affected by said opening in the post) to which the upper covering element is connected; in other words, the cutout for part 2a does not affect the entire lateral wall of the post: starting from an area of the post located above the base 3, it stops before the end of the post where in fact there remains the intact area 2d in which the tubular element from which the post is made retains its perimeter intact. This intact area 2d confers on the fixed part 2b of the post a rigidity practically equal to that of the intact post, and prevents any deformation of the sides of this fixed part.

[0015] The removable means of connection by means of which the parts of the post are held together comprise at least one pair of bushes; in the drawings three of such pairs of bushes are shown. Each pair comprises an internally threaded bush 6a, which is solidly anchored, for example by welding, on a median longitudinal line of part 2b of the post, and comprises a through bush 6b solidly anchored, for example by welding, on a median longitudinal line of part 2a of the post; the inside of the bush 6b is accessible from the outside of the wall of part 2a of the post. Each pair of bushes is associated with a screw 7. In use, i.e. when the parts of the post are connected together, the bushes in each pair are arranged coaxially with each other so as to make it possible, in each pair, to insert the respective screw 7 from the outside of the post into bush 6b and screw it into bush 6a.

[0016] In the upper covering element 4 a light source 8 is provided, which can be made for example using LEDs powered by photovoltaic panels, or LEDs or other light-emitting devices (for example ordinary lightbulbs) powered by electrical current; in the latter case the cables which carry the supply can come from the bottom (i.e. from the structure to which the base of the post is anchored, and travel up the inside of the post to the top). The light source can also itself constitute the upper covering element 4. In the solution illustrated the light source is arranged between the intact area 2d of the post and the covering element 4, and is made using a cylinder of transparent or translucent material (for example transparent or satin finish plastic or glass) inside which are provided lamps which, when powered by electricity, emit

light.

[0017] To construct a fence, in which each panel is connected to a post and to a neighbouring post (previous or subsequent), the fixed parts of the posts are located on the ground on which they rest by means of the respective plates 3a of the bases 3 to which the fixed parts of the posts are connected; through holes are formed in the plates 3a which allow fixture to the ground by means of bolts or other fixing components of known type; at the centre of each plate a further through hole is formed which, in the case of a light source powered by electricity, allows the wires to pass through, coming from the structure below and not illustrated, to provide the electrical supply.

[0018] Once the posts are set up, at a distance equal to the length of the panel which they are to support, a panel 1 is hung, by its upper left-hand mesh, from the hooking element 5 on the post to its left and, by its upper righthand mesh, from the hooking element 5 on the post to its right; this operation proceeds in succession for the various posts and panels. It should be noted that the panels are supported by the hooking elements and rest against the rear part of the post, and therefore remain in the position where they are put and have no need of an operator to support them.

[0019] Once two panels, to the right and to the left, are hooked onto each post, and any necessary electrical contacts are made for the light source at the top of the post, the removable part of the post is brought into contact with the fixed part and fixed to it by means of the screws 7 which engage in the threaded bushes 6a; the horizontal wires of the last meshes of the panels thus remain sandwiched in the gaps 2c and clamped between parts 2a and 2b of the posts which are connected together, and the panels are thus solidly connected to the respective posts. It should be noted that the width of the meshes which are inserted into the posts allows a certain play, which makes the distance between the axes of the posts during their positioning non-critical. Given that the posts are themselves self-supporting due to the width of their bases, it is possible to fix the posts to the ground before connecting the panels to them, or to make the connection between a panel and two neighbouring posts, close up the post and connect it later to the ground, an operation which is permissible even with the post closed because the through holes for fixing it to the ground are, as is clearly visible in the drawings, external to the circumference of the post; to perform this operation, it is sufficient to raise the cover 3b which covers the plate 3a, sliding it up the post, connect plate 3a to the ground and lower cover 3b again.

[0020] The posts illustrated in the drawings are of the type suitable for being used for straight runs of fence; in fact in these posts the angular width of the section of part 2a of the post is 180°; the longitudinal gaps 2c are therefore on the same plane, and the panels connected to this type of post are laid out over a straight route.

[0021] To make a right-angled portion of fencing, a

post must be used in which the angular width of the section of part 2a is 90°, so that the panels come out of the post on two planes, perpendicular to each other.

[0022] Naturally it is possible to envisage posts capable of realising fences which proceed along a course defined by straight segments angled to each other at angles other than 180° and 90°; it is sufficient in fact to prepare posts in which the angular width of the section of part 2a is equal to the angle which it is desired to obtain between the two panels connected to the post, in order to obtain a route for the fence which has that particular angle.

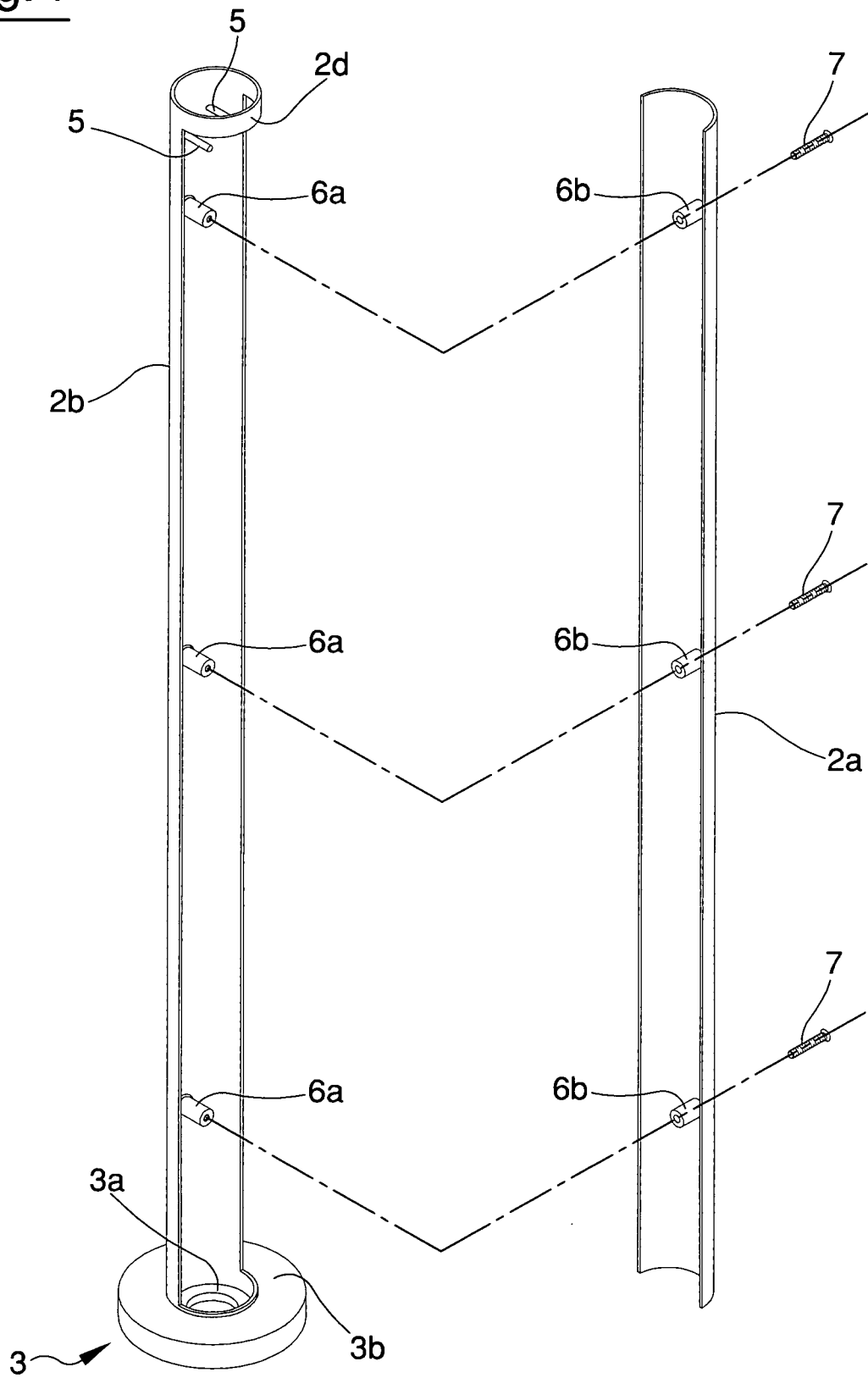
[0023] Both the posts and the panels are metal and can be galvanised, painted or plastic-coated in various colours; the panels can be variously shaped, provided that they are of the right height to be inserted in the longitudinal gaps in the posts and are sufficiently rigid.

Claims

1. Modular post for supporting panels for fences, of the type to be used for supporting substantially flat panels (1), made with horizontal (1a) and vertical (1b) metal wires, electrically welded, which in the process of creating the fence are fixed to posts (2) which in their turn are fixed to the ground at one of their ends by means of a base (3) to which the end of the post is anchored, and of the type made using a tubular element and comprising an upper covering element (4) to close the top of the post, **characterised in that:** the post has a part (2a) of its lateral surface which is detached from the remaining fixed part (2b) of the post which has an opening corresponding to said detached part (2a); in use the part (2a) is reconnected, using removable connection means (6a, 6b, 7), to the fixed part so as to reconstitute the post; part (2a) of the post has a section of predetermined angular width, has a height which is not less than the height of the panel which is connected to the post, and extends, starting on the upper side of the base (3) of the post; in use, between the edges facing each other of parts (2a) and (2b) of the post, connected to each other, longitudinal gaps (2c) are created with a width roughly equal to the width of the horizontal wires of the panels connected to the post.
2. Post according to claim 1, **characterised in that:** it comprises hooking elements (5) one end of which is solidly fixed to the fixed part (2b) of the post in an area accessible from the opening in the post, and whose free end is, in use, accessible from at least one of said longitudinal gaps (2c).
3. Post according to claim 1, **characterised in that** at the upper end of the post an intact area (2d) is provided, (not affected by said opening in the post) to which said upper covering element (4) is connected.

4. Post according to claim 1, **characterised in that:** said removable connection means comprise at least one pair of bushes, each of which comprises an internally threaded bush (6a), solidly anchored on a median longitudinal line of part (2b) of the post, and a through bush (6b), solidly anchored on a median longitudinal line of part (2a) of the post, whose inside is accessible from the outside of the wall of part 2a of the post; in use the bushes in each pair are arranged coaxially with each other; each pair of bushes is associated with a screw (7) which, in use, is inserted from the outside of the post into bush (6b) and screwed into bush (6a).
5. Post according to claim 1, **characterised in that** on said upper covering element (4) a light source is provided.

Fig. 1



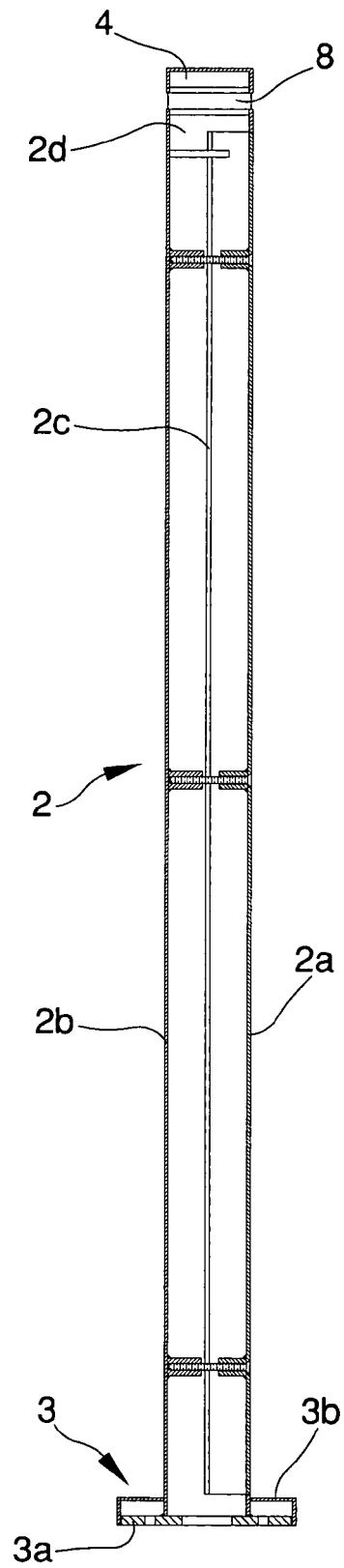


Fig. 2

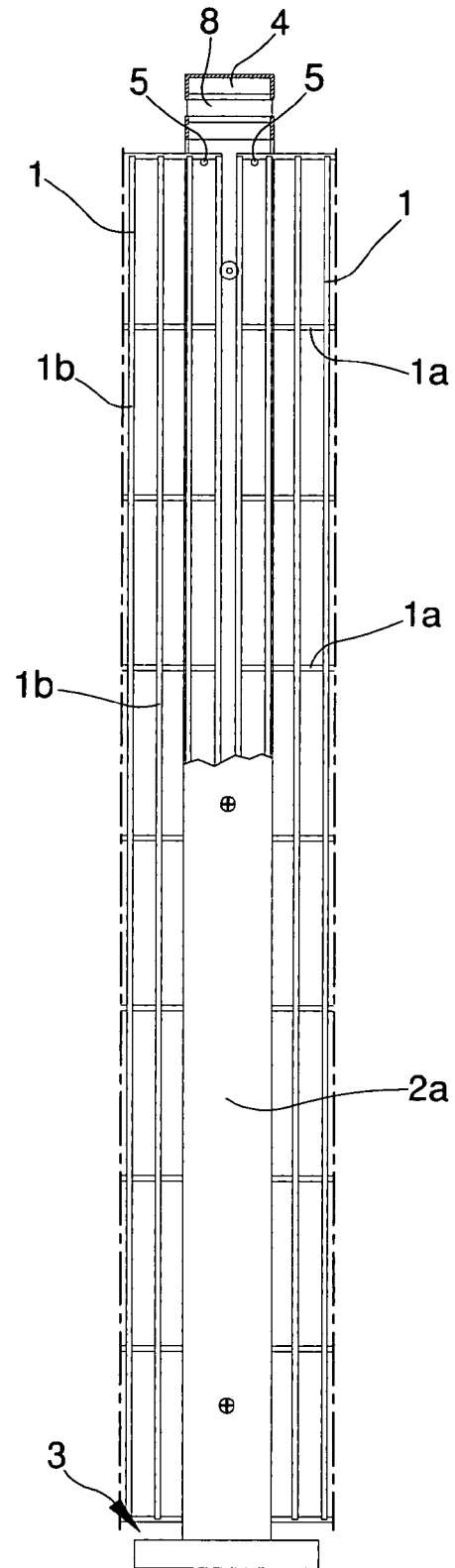


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 10 42 5355

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP 2010 196289 A (SHIKOKU CHEM) 9 September 2010 (2010-09-09) * figures 1, 3 *	1-4	INV. E04H17/16 E04H17/20
X	----- WO 2008/038957 A1 (LEE DAE YOUNG [KR]) 3 April 2008 (2008-04-03) * figure 10 *	1-3	
Y	----- EP 0 503 952 A1 (MNJ ENG [IE]) 16 September 1992 (1992-09-16) * figures 7, 9 *	5	
X	----- US 2005/247920 A1 (BURKART MICHAEL G [US] ET AL) 10 November 2005 (2005-11-10) * the whole document *	1	
Y	----- DE 203 00 712 U1 (HERMAN MATTHIAS [DE]) 27 March 2003 (2003-03-27) * figures 1, 4, 5a *	5	
A	----- DE 203 00 712 U1 (HERMAN MATTHIAS [DE]) 27 March 2003 (2003-03-27) * figures 1, 4, 5a *	1-5	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04H
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 3 May 2011	Examiner Bauer, Josef
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 42 5355

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The members are as contained in the European Patent Office EDP file on
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03-05-2011

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
JP 2010196289	A	09-09-2010	NONE		
WO 2008038957	A1	03-04-2008	NONE		
EP 0503952	A1	16-09-1992	NONE		
US 2005247920	A1	10-11-2005	US	D497023 S1	05-10-2004
DE 20300712	U1	27-03-2003	EP	1441090 A1	28-07-2004